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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,865	06/06/2002	Thomas Franz	449122021000	2451

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EXAMINER

DOLE, TIMOTHY J

ART UNIT PAPER NUMBER

2858

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/049,865

Applicant(s)

FRANZ ET AL.

Examiner

Timothy J. Dole

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 23 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanai et al.

Referring to claim 1, Yanai et al. discloses a method for determining the offset error of a measurement, where the measurement is subject to such an offset error of a coil current of an electromagnetic actuator which has two coils respectively assigned to two final positions of the actuator, comprising: supplying a current to the coil assigned to the present final position (fig. 4 (C) and column 8, lines 63-66); and measuring the coil current through the coil not assigned to the present final position (column 9, lines 44-48), where the coil not assigned to the present final position is not supplied with a current, to determine the offset error (fig. 4 (B)). It should be noted that when the holding current is supplied to the second coil, no current is supplied to the first coil. Also, as shown in fig. 4 (B), the current through the first coil is measured throughout the valve operation and is used for offset determination.

Referring to claim 4, Yanai et al. discloses the method as claimed, further comprising: supplying the coil assigned to the final position with a capture current and a holding current such that the actuator is transferred into the final position (fig. 4).

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanai et al. in view of Bosley et al.

Referring to claim 2, Yanai et al. discloses the method as claimed except wherein the coil current is measured by potential tapping before and after a resistor connected in series with the coil, wherein the potential taps are being fed to a differential amplifier, and a constant value is added to a value output by the differential amplifier.

Bosley et al. discloses an electromagnetic actuator wherein the coil current is measured by potential tapping before and after a resistor connected in series with the coil (fig. 4), wherein the potential taps are being fed to a differential amplifier (fig. 4 (51')), and a constant value is added to a value output by the differential amplifier (column 6, lines 29-40).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the coil current measurement electronics of Bosley et al. into the method of Yanai et al. for the purpose of providing specific measurement signals whereby making it possible to provide more control and better analysis of the system.

Referring to claim 5, Yanai et al. discloses a circuit for determining the offset error of a measurement (fig. 5), the measurement subject to an offset error of a coil current  $I$  of an electromagnetic actuator, the circuit comprising: two coils (fig. 2 (24) and (26)) that are components of the actuator (fig. 2) and a control circuit (fig. 5 (56)) which evaluates the output of the current measurement circuit when the first coil is not carrying any current and the second coil is carrying current (fig. 4 (B) and (C)), and the value obtained is output as the offset error  $I_o$  (column 9, lines 48-50).

Yanai et al. does not disclose the coil current measurement circuit comprises a resistor connected in series into a supply line of the first coil or a differential amplifier to which the potential on both sides of the resistor is fed.

Bosley et al. discloses a coil current measurement circuit that comprises a resistor (fig. 4) connected in series into a supply line of the coil (fig. 4) wherein the coil is a component of the actuator and a differential amplifier (fig. 4 (51')) to which the potential on both sides of the resistor is fed (fig. 4).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the coil current measurement electronics of Bosley et al. into the method of Yanai et al. for the same purpose as given in claim 2, above.

Referring to claim 6, Yanai et al. discloses the circuit as claimed wherein the output of the differential amplifier is fed together with the output of a constant-voltage source (fig. 5 (voltage from 50)) to an adding element (fig. 5 (56)) such that an offset error of a specific polarity is obtained.

Referring to claim 7, Yanai et al. discloses the circuit as claimed wherein the actuator has first and second coils (fig. 2 (24) and (26)) assigned to a final position (fig. 4).

Yanai et al. does not disclose a resistor is connected in the supply line to each coil, the differential amplifier taps the voltage dropping across the resistor, and the control circuit evaluates outputs of the differential amplifiers.

Bosley et al. discloses a resistor (fig. 4) is connected in the supply line to each coil (fig. 4); the differential amplifier (fig. 4 (51')) taps the voltage dropping across the resistor (fig. 4) and the control circuit evaluates to outputs of the differential amplifiers (fig. 4).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the coil current measurement electronics of Bosley et al. into the method of Yanai et al. for the same purpose as given in claim 2, above.

Referring to claim 8, Yanai et al. discloses the circuit as claimed wherein the control circuit for supplying current to the first and second coils transfers the actuator into a final position (fig. 4), and the first coil assigned to the final position carries a capture current and a holding current, and the control circuit evaluates the output of the differential amplifier of the second coil (fig. 4).

5. Claim 9 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yanai et al.

Yanai et al. discloses the method as claimed, but does not specifically claim low pass filtering the signal multiple times.

It would have been obvious to one skilled in the art at the time of the invention to incorporate low pass filtering into the method of Yanai et al. for the purpose reducing noise and other erroneous signals that have inadvertently been added to the desired signal.

### *Response to Arguments*

6. Applicant's arguments filed June 23, 2005 have been fully considered but they are not persuasive.

7. In response to Applicants argument with respect to claims 1 and 5, that Yanai fails to teach or suggest that the coil current of the coil not supplied with a current is measured to determine an offset error, it should be noted that as shown in the above rejection, Yanai shows that the first coil is not supplied with a current when a holding current is supplied to the second coil (fig. 4 (B) and (C)). Also, the coil current of the first coil is measured to determine offset error as shown in Yanai in fig. 5 (column 9, lines 44-48).

### *Final Rejection*

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### *Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is (571) 272-2229.

The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJD



VINCENT Q. NGUYEN  
PRIMARY EXAMINER